

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matters of	)	
	)	
	)	
A National Broadband Plan For Our Future	)	GN Docket No. 09-51
	)	
Inquiry Concerning the Deployment of	)	
Advanced Telecommunications Capability to	)	
All Americans in a Reasonable and Timely	)	
Fashion, and Possible Steps to Accelerate Such	)	
Deployment Pursuant to Section 706 of the	)	
Telecommunications Act of 1996, as Amended	)	
by the Broadband Data Improvement Act	)	GN Docket No. 09-137
	)	
Implementing a Nationwide, Broadband,	)	
Interoperable Public Safety Network in the 700	)	
MHz Band	)	PS Docket No. 06-229
	)	
	)	
Service Rules for the 698-746, 747-762 and	)	
777-792 MHz Bands	)	WT Docket No. 06-150

**JOINT COMMENTS OF  
CLEARWIRE CORPORATION AND SPRINT NEXTEL CORPORATION**

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**I. INTRODUCTION AND SUMMARY.**

Clearwire Corporation (“Clearwire”) and Sprint Nextel Corporation (“Sprint”) commend the Federal Communications Commission (“FCC” or “Commission”) for initiating this inquiry into the public safety, homeland security, and cybersecurity aspects of the National Broadband Plan.<sup>1</sup> We agree with the Commission that it is critical that the FCC adopt policies that will improve access to broadband wireless services for public safety users.

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<sup>1</sup> Additional Comment Sought on Public Safety, Homeland Security, and Cybersecurity Elements of National Broadband Plan, NBP Public Notice # 8, GN Dockets 09-47, et al. (Sept. 28, 2009).

To achieve this goal, Clearwire and Sprint urge the Commission to include three key findings in the National Broadband Plan's discussion of public safety. *First*, the National Broadband Plan should establish a set of clear principles to guide the agency's pursuit of policies that will improve public safety communications. The three most important principles are: (1) competition among providers and technologies will lead to the best services and prices for public safety users; (2) technologically neutral FCC policies will allow public safety users to access the best innovations while government-mandated technology limitations will increase costs, reduce flexibility and limit the functionality of public safety systems; and (3) public safety users must not only have the ability to interoperate with other public safety users in cases of emergency, but also have the ability to integrate 4G wireless networks with legacy systems. Adopting these principles will promote a resilient, interoperable foundation that allows public safety users to capitalize on prior investments in land mobile radio and quickly access the economies of scale and scope that 4G technologies offer.

*Second*, to advance public safety communications, the National Broadband Plan should promote an "all-networks" approach. This approach would provide public safety access to a wide range of networks so that individual agencies can build the mix of capabilities they need, rather than focusing exclusively on one band, one technology or one system architecture. The Commission's pro-competition and technology-neutral regulatory policies have created a consumer wireless environment characterized by low prices, high-quality service and constant technological advances. An all-networks approach would do the same for public safety entities.

The all-networks approach reflects the reality that most commercial radios are able to operate across multiple bands and, in some cases, with multiple radio technologies. Similar public safety radios are entirely feasible. In addition, the all-networks approach embraces the

use of IP-based digital cross-connect technologies that are already being used by public safety entities to achieve interoperability among a variety of legacy networks. As a result, all networks today can be, at least in part, public safety networks. FCC policy should reflect this reality. Conversely, the FCC should reject any proposal that locks public safety in to any particular technology, band, or set of providers. As House Energy and Commerce Committee Chairman Henry Waxman stated at a recent hearing on establishing a national interoperable broadband network, “the plan should try to avoid distorting or disrupting the commercial wireless marketplace by giving an unfair advantage to certain carriers over others.”<sup>2</sup>

*Third*, the National Broadband Plan should recommend an auction of the D-Block and reject Verizon and AT&T’s proposal to abandon the auction mechanism.<sup>3</sup> Any possible benefits of Verizon and AT&T’s proposal are outweighed by two fundamental flaws. First, the proposal would effectively prevent a third nationwide commercial operator from ever emerging in the 700 MHz band by precluding commercial ownership of the D-Block. Second, the proposal would confine *all* public safety broadband communications to a single technology in a single band. Verizon and AT&T’s plan would use regulatory fiat to restrict the supply of competitive service and prevent public safety demand from finding competitive alternatives. It would therefore effectively impose a new “essential facilities” model on public safety that, in classic duopoly

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<sup>2</sup> Opening Statement of Rep. Henry A. Waxman, Chairman, Committee on Energy and Commerce, Hearing on A National Interoperable Broadband Network for Public Safety, Subcommittee on Communications, Technology, and the Internet (Sept. 24, 2009).

<sup>3</sup> Remarks of Steve Zipperstein, Vice President and General Counsel, Verizon Wireless, National Press Club, April 17, 2009; Reply Comments of Verizon Wireless, Service Rules for the 698-746, 747-762 and 777-762 MHz Bands, WT Docket No. 06-150, PS Docket No. 06-229 (filed Nov. 12, 2008).

fashion, would allow two providers to raise prices and reduce output to the now-captive public safety market.<sup>4</sup>

## **II. THE NATIONAL BROADBAND PLAN SHOULD ESTABLISH CLEAR PRINCIPLES TO GUIDE FEDERAL PUBLIC SAFETY POLICIES.**

Clearwire and Sprint agree with Chairman Genachowski that public safety communications must be “a top priority” of the Commission.<sup>5</sup> The Commission is responsible for advancing policies that develop a communications network “for the purpose of promoting safety of life and property through the use of wire and radio communication.”<sup>6</sup> The National Broadband Plan presents the Commission with an opportunity to guide not only FCC policy, but, through advice to Congress, to influence the entire federal government’s policies as they relate to advancing the critical goal of improving public safety communications. Clearwire and Sprint urge the Commission to take advantage of this unique moment to establish a clear set of principles to ensure that future public safety communications policy decisions proceed in a coordinated manner and are based on a solid and well-understood strategic foundation. The National Broadband Plan’s discussion of public safety communications therefore should be prefaced with a recitation of the core ideas that will guide federal decision making in this area.

As noted above, the Plan’s first principle should be that competition among providers and technologies will lead to the best services and prices for public safety users. The Commission has long recognized that competition is the most effective way to deliver innovation and value to

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<sup>4</sup> In many markets, public safety would, at best, have access to a Bell duopoly, which if the cellular experience is any guide, would have little or no incentive to compete on the basis of price, quality, service or innovation for public safety users.

<sup>5</sup> Written Statement of Julius Genachowski, Chairman, Federal Communications Commission, before the Committee on Energy and Commerce, Subcommittee on Communications, Technology and the Internet, U.S. House of Representatives, at 3 (Sept. 17, 2009) *available at* [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-293508A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-293508A1.pdf).

<sup>6</sup> 47 U.S.C. § 151.

consumers, whether those consumers are individuals, corporations, or government entities. The Commission's recent Notice of Inquiry on Wireless Competition explains: "A robustly competitive mobile wireless market will be essential to realizing the full benefits to American consumers and channeling investment toward vitally important national infrastructure. A vibrant mobile wireless market is also essential to driving innovation, not only within the mobile market itself, but also in markets—current and future—for which wireless mobility is a key enabler. We seek to ensure that competition in the mobile wireless market continues to bring substantial benefits to American consumers."<sup>7</sup> The competition that forces down prices and drives constant innovation for commercial purchasers of wireless services applies equally to public safety entities, who also seek access to the best broadband services and the best mission-critical voice capabilities, at the best prices.

The National Broadband Plan's second public safety principle should be that technologically neutral FCC policies will allow public safety users to access the best innovations while government-mandated technology decisions will relegate public safety systems to higher costs, less flexibility, and less utility. As the Commission has recognized, FCC policy must always be flexible enough to ensure that rules do not limit innovation or become out of date as the state of the art advances. The FCC's recent Notice of Inquiry on the National Broadband Plan itself recognizes this risk in its discussion of setting a definition of broadband, stating:

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<sup>7</sup> Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless including Commercial Mobile Services, Notice of Inquiry, WT Docket 09-66, ¶ 2 (Aug. 27, 2009) ("*Wireless Competition NOI*"); *See, also* Letter from Thomas J. Sugrue, Vice President, Government Affairs, T-Mobile, USA, to Chairman Rick Boucher and Ranking Member Cliff Stearns, re: A National Interoperable Broadband Network for Public Safety: Recent Developments (September 23, 2009) ("A carrier's ability to compete successfully in the wireless industry is linked directly to its ability to provide new and innovative [next generation] services and equipment. Competition, in turn, ensures continued downward pressure on prices and upward pressure on further innovation.")

“With technology developing at such a rapid pace, it is important that we do not lose sight of the potential for monumental shifts in technological platforms that would render definitions obsolete or indeed harmful to developments that might otherwise take place in the market.”<sup>8</sup>

The same is true for public safety technologies. Technology advances promise to improve public safety applications as well as commercial applications, and public safety users deserve federal policies that assure them continuing access to the most up-to-date innovations. To ensure that federal policy does not undermine such access, this principle will establish that the federal government should not lock public safety entities into using just one technology or spectrum band. This principle applies not only to emerging public safety broadband services, but also to public safety’s continuing need for reliable, interoperable land mobile voice communications across political jurisdictions, as well as regional and even national emergency response communities.

Finally, the Plan’s third public safety principle should state that federal policies will promote interoperability while also enabling public safety access to both commercial and dedicated networks. The Plan should encourage the use of a variety of bands and technologies and not assume public safety entities will use only designated public safety bands. Public safety users and wireless providers agree that an explosion of spectrum-hungry broadband technologies and applications has made identifying additional spectrum resources a high priority.<sup>9</sup> Public safety entities are using spectrum more than ever before, and with access to additional spectrum

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<sup>8</sup> A National Broadband Plan for our Future, Notice of Inquiry, GN Docket No. 09-51, ¶ 22 (April 8, 2009).

<sup>9</sup> Written Statement of APCO International, before the Committee on Energy and Commerce, Subcommittee on Communications, Technology and the Internet (Sept. 24, 2009) (“*APCO Statement*”) (“Unfortunately we are working with two finite resources - spectrum and money - and both are desperately needed to build out a national network.”)



resources public safety operations can become more effective.<sup>10</sup> Accelerating needs will put constant pressure on available spectrum resources, and different technologies and applications require access to frequencies with different physical characteristics and networks with different attributes. Adopting this third principle will ensure that federal policies will no longer assume that the answer to the spectrum crunch is found solely in designated public safety spectrum and will instead provide public safety agencies with the flexibility to achieve interoperability and create enhanced reliability by combining their private land mobile networks with services and capabilities obtained from commercial networks using different spectrum bands and technologies.

### **III. THE NATIONAL BROADBAND PLAN SHOULD ADOPT AN ALL-NETWORKS APPROACH TO PUBLIC SAFETY BROADBAND.**

Reliable, real-time communications are essential for public safety users. But providing first responders with a redundant, interoperable communications platform does not necessarily mean that every public safety user should rely on the same radio access device, the same frequency band, or the same air interface for mission-critical communications. Reliance on a single radio type, in a single spectrum band, or a single air interface for all public safety communications substantially increases the risk that a single point of failure could cripple the nation's emergency communications infrastructure at a critical time.

Fortunately, establishing a single public safety communications network need not be a necessary element of the National Broadband Plan. To ensure that public safety users benefit from robust competition on price, standards, service and innovation, Commission policy should advance common, scalable systems platforms that permit interoperability across a wide range of

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<sup>10</sup> Letter from Richard Mirgon, President, APCO international, to Chairman Rick Boucher (Sept. 23, 2009) (Additional spectrum resources “would vastly improve our collective and individual abilities to protect and serve our nation’s citizens and communities.”)

networks. These platforms would enable and encourage competition among a wide variety of service providers using different spectrum bands, communications infrastructures, service capabilities, and price structures to best serve public safety. Therefore the National Broadband Plan should state that every public safety user should have access to: (1) one or more ubiquitous, nationally available communications networks; and (2) a robust system of network cross-connections that offer backward capability for public safety's existing land mobile radio systems, forward compatibility for next-generation broadband networks, and inter-system compatibility to other public safety technologies and platforms.

**A. Public Safety Users Should Have Access to One or More Nationally Available Networks.**

When an emergency demands a multi-jurisdiction response, public safety users need to have high confidence that they can use their own devices, services, and applications at the scene of an event regardless of jurisdiction. The public safety broadband debate thus far has been too limited on one possible approach to meeting this need – deploying the same technology in the same band in the same manner across the entire breadth of the country. The National Broadband Plan should reject this approach and instead work to create the conditions that will provide public safety users with the capability and the capacity necessary to mount a resilient multi-jurisdiction, multi-agency response to a disaster both now and in the future.

Unfortunately, the single-technology, single-band approach would deny public safety users the benefits of robust, facilities-based competition that wireless consumers have enjoyed. It would ignore the demonstrably beneficial role that permitting different technologies and standards to coexist has played in promoting innovation in the U.S. wireless market. And it essentially shrugs off the vastly different service and application needs of individual jurisdictions

across the country.<sup>11</sup> This approach would also deny the innovation and cost benefits that could be achieved through the wide variety of commercial networks that already provide services. Perhaps worst of all, this sole-source approach courts disaster by creating a single point of failure – whether by band, technology, or provider – that could disable the mission-critical communications of multiple public safety organizations throughout the country.

Sprint and Clearwire agree that every public safety agency and first responder needs access to at least one nationally deployed broadband radio network. However, not every public safety user needs, or, indeed, should have, access to the *same* radio system as every other public safety user. So long as every first responder uses a radio that is fully interoperable with a widely deployed radio infrastructure, it no longer matters which particular national network the first responder decides to use. A public safety user would simply roam to the alternative network infrastructure when operating in a different jurisdiction.

An all-networks approach would employ multiple, redundant nationwide systems to avoid the single point-of-failure problem that will always haunt the single-technology, single-band approach. It would rely on a distributed architecture that uses readily available commercial cross connects to establish a platform for robust competition by different radio architectures, standards and competitors. The all-networks approach, furthermore, could support seamless broadband connectivity among first responders while also offering them mission-critical feature sets such as push-to-talk, group connect, and “talk around” services available on, for example, Sprint’s nationwide 800 MHz iDEN network with far more capacity – and much greater resiliency – than possible over a single-band, single-technology solution.

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<sup>11</sup> See Comments of CTIA-The Wireless Association® at 16-39, GN Docket Nos. 09-51 and 09-157 (filed Sept. 30, 2009); Comments of AT&T Inc. at 12-46, GN Docket Nos. 09-51 and 09-157 (filed Sept. 30, 2009); Comments of Verizon Wireless at 5-41, GN Docket Nos. 09-51 and 09-157 (filed Sept. 30, 2009).

**B. Public Safety Users Should Have Access to Platforms that Permit Forward Compatibility to Advanced Broadband Networks and Backward Compatibility to Costly and Long-Lived Land Mobile Radio Networks.**

Across the country, major institutional users of broadband are reaping the benefits of advances in cross-connect technology. Cross connects link disparate service providers, technologies, and networks that use different spectrum bands and air interfaces into an integrated network of networks. The result is more robust, flexible, and diverse than any one network, technology, or band.

Digital cross-connect technologies receive radio signals from devices or systems using one protocol or interface, translate them into a second protocol or interface, and transmit them to devices or systems that rely on the second protocol or interface in a manner that is unnoticed by the user. These solutions are reliable, cost effective, and proven through years of successful deployment.<sup>12</sup> Cisco, for example, offers a “Land Mobile Radio (LMR) Gateway Solution” that uses integrated services routers with LMR-specific software capabilities. These gateways, which many public safety agencies have already begun to deploy throughout the country, link to existing LMR systems and adapt LMR audio and signaling to a common language. Public safety operators can then use a scalable, distributed architecture to support many users across a public or private network that incorporates features and functions from many different kinds of wireless, wireline, and IP networks – public and private, state and Federal, advanced and basic.<sup>13</sup> Cisco also offers a more advanced Interoperability and Collaboration System (“IPICS”) that

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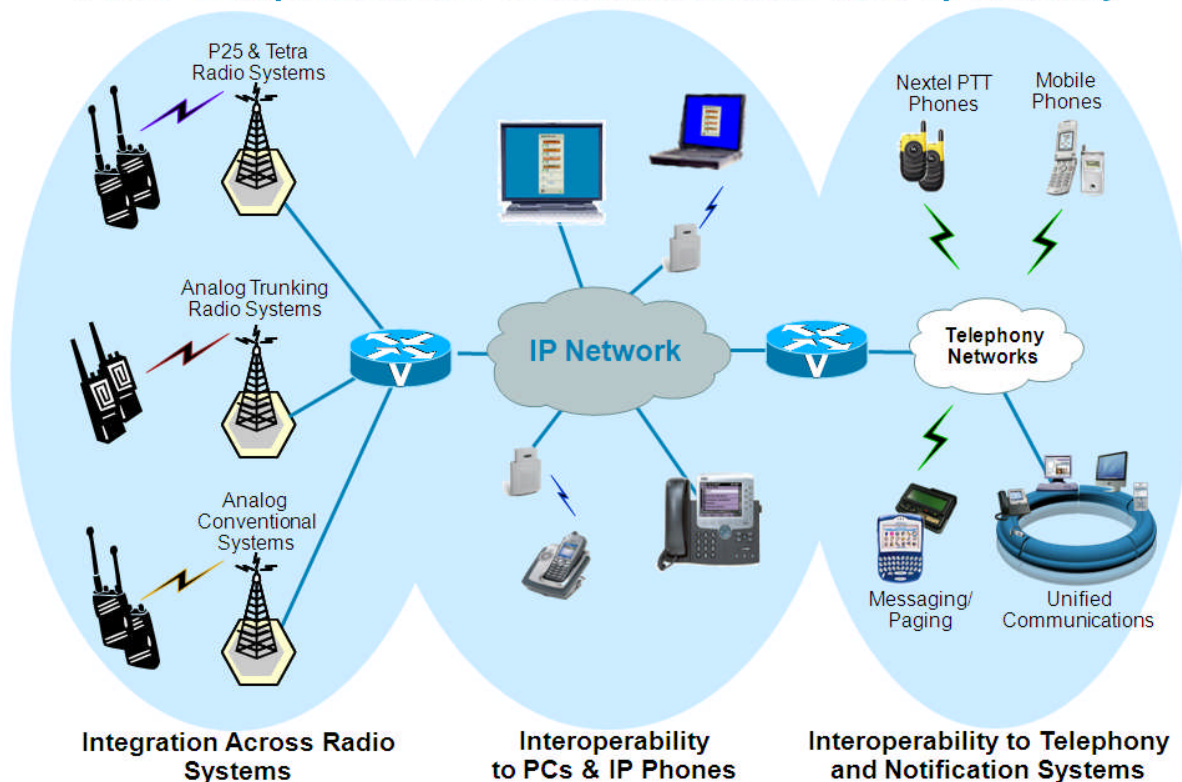
<sup>12</sup> See [http://www.motorola.com/staticfiles/Business/Solutions/Business%20Solutions/Mission%20Critical%20Communications/MOTOBIDGE%20IP%20Interoperability%20Solution/\\_Documents/\\_Static%20files/MOTOBIDGE%20Article%20ReprintRAD-99-2027.pdf?localeId=33](http://www.motorola.com/staticfiles/Business/Solutions/Business%20Solutions/Mission%20Critical%20Communications/MOTOBIDGE%20IP%20Interoperability%20Solution/_Documents/_Static%20files/MOTOBIDGE%20Article%20ReprintRAD-99-2027.pdf?localeId=33).

<sup>13</sup> See [http://www.cisco.com/en/US/prod/collateral/routers/ps259/product\\_data\\_sheet0900aecd8034ef85\\_ps5855\\_Products\\_Data\\_Sheet.html](http://www.cisco.com/en/US/prod/collateral/routers/ps259/product_data_sheet0900aecd8034ef85_ps5855_Products_Data_Sheet.html).

enables interoperability to PCs, IP phones, messaging/paging devices, unified communications systems, and 4G terminals.

### Cisco Interoperability and Collaboration System

#### IPICS Comprehensive Communications Interoperability

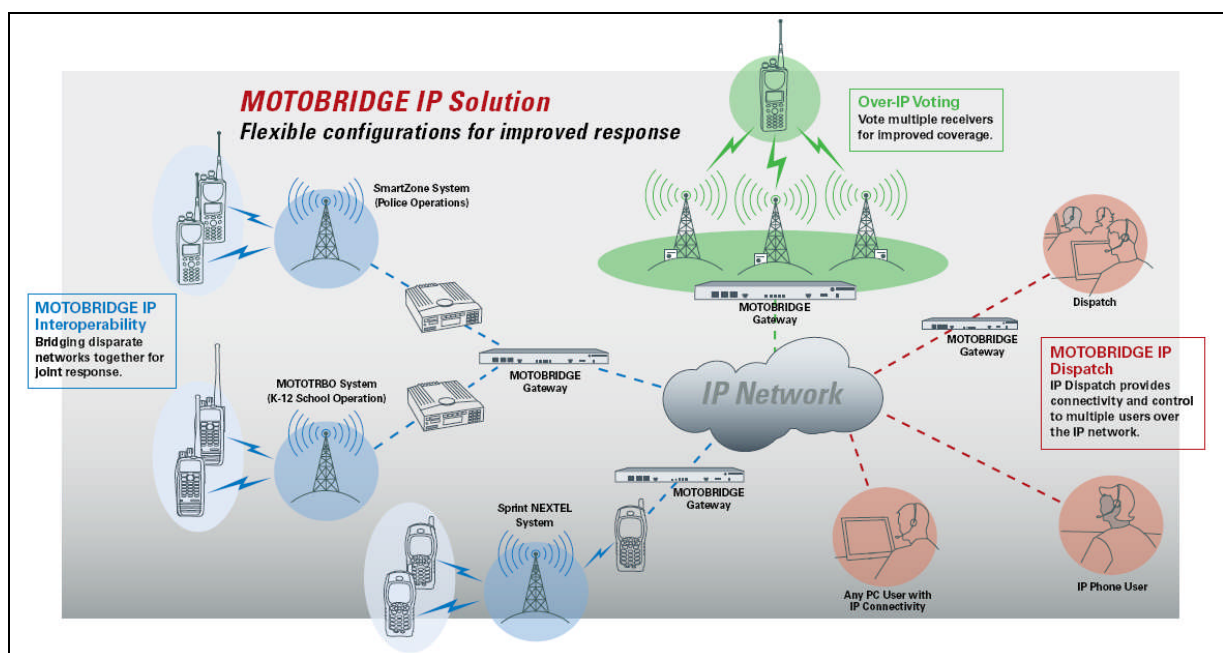


These systems incorporate extremely robust security features to preserve the integrity and security of public safety's mission-critical communications and applications, but still allow public safety users to benefit from the widely recognized cost and scale economies associated with open standards protocols that permit large developer communities to produce, update and support innovative, value-added applications. Once integrated into a common network protocol, moreover, public safety users can employ systems-based collaborative software to manage and

configure the disparate networks' functionalities into a single familiar user interface to provide advanced features without requiring changes to existing operating procedures.<sup>14</sup>

Motorola offers an interoperable, scalable infrastructure under the trade name MotoBridge. Like the Cisco system, the MotoBridge solution uses a distributed architecture with no single point of failure. Thus, if one piece of equipment is damaged, destroyed or otherwise rendered inoperable, all other components of the network will continue to operate. The system is scalable and widely adaptable for a variety of situations. Unlike traditional systems, moreover, office or field users can connect to the network from anywhere and monitor or control a situation with no specialized hardware.<sup>15</sup>

### MotoBridge Interoperability Solution



<sup>14</sup> See <http://www.nps.edu/Academics/Institutes/Cebrowski/Docs/IPICS%20Solution%20Overview.pdf>.

<sup>15</sup> See [http://www.motorola.com/staticfiles/Business/Products/Two-way%20Radio%20Infrastructure/Gateways/MOTOBRIDGE%20Interoperable%20IP%20Solution/Documents/MOTOBRIDGE\\_Brochure\\_final.pdf?localeId=33](http://www.motorola.com/staticfiles/Business/Products/Two-way%20Radio%20Infrastructure/Gateways/MOTOBRIDGE%20Interoperable%20IP%20Solution/Documents/MOTOBRIDGE_Brochure_final.pdf?localeId=33).

Putting aside the potential for immense cost savings from these next-generation technologies, the practical implications of innovative, open-standard cross-connections and systems-based integration features for public safety interoperability are tremendous. With digital cross-connects, public safety entities can design their networks to allow interoperability between legacy and new technologies, different public safety agencies within a jurisdiction, and among multiple jurisdictions. Public safety users also interoperate not only with other land mobile radio systems and push-to-talk radio networks, but also with advanced IP phones and computer-based communications applications. The bottom line is that digital cross connects mean that public safety agencies can potentially obtain services from all networks that they determine to be beneficial and cost-effective to carrying out their responsibilities.

**C. An All-Networks Approach is Superior to a Government-Mandated Technology Standard.**

The Commission should recognize this technological change and adopt an all-networks approach to public safety broadband in the National Broadband Plan. An all-networks approach would base federal policy on the understanding that digital cross connects give public safety entities, for the first time, the power to choose the best products and services from any operator using any network with a robust national footprint, regardless of the service provider's air interface or licensed radio frequencies.<sup>16</sup>

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<sup>16</sup> Verizon Wireless appears to admit that IP-based technologies would allow a disparate set of public safety systems to cross-connect, and therefore achieve interoperability without the need for a single standardized system. *See*, Reply Comments of Verizon Wireless, Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, PS Docket 06-229 (filed Nov. 12, 2008) (“*Verizon Reply Comments*”).

A federal policy that mandates a single technology or spectrum band would violate the FCC's long adherence to technology-neutral decision making<sup>17</sup> and, as detailed above, would unnecessarily stymie advances in public safety communications. An FCC technology mandate would limit public safety users' choice of commercial partners to those companies that use the mandated technology. This would eliminate public safety entities' negotiating leverage as they seek to contract for the best and most cost-effective services, coverage, and capacity. A government-imposed restriction such as a mandated single air interface would preclude public safety from seeking bids from many service providers. A market for public safety broadband that includes these service providers would be far more competitive than one limited to the few – or in some cases one – service provider using the mandated technology in a given geography. Without the price discipline and pressure to deliver the best service that is created only through robust competition, public safety users will be hostage to their narrow service provider options. In cases where only one company is able to meet an FCC technology mandate in a community,

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<sup>17</sup> See Statement of Commissioner Robert M. McDowell, A National Broadband Plan for our Future, GN Docket No. 09-51, ¶ 5 (April 8, 2009) (“As we develop our record in this proceeding, I will keep in mind some fundamental concepts. First, it is critical that our plan be competitively and technologically neutral. Given the incredibly diverse nature of our country – both in terms of geography and demographics – our plan must not favor one particular technology or type of provider over another, even inadvertently.”); American Recovery and Investment Act of 2009 § 6001(e) (“In establishing [the public interest rule related to eligibility], the Assistant Secretary shall to the extent practicable promote the purposes of this section in a technologically neutral manner.”). See also Federal Communications Commission, Bringing Broadband to Rural America: Report on a Rural Broadband Strategy ¶ 78 (May 22, 2009), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-291012A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-291012A1.pdf) (“[D]ecision makers should proceed on a technology-neutral basis—by considering the attributes of all potential technologies—in selecting the technology or technologies to be deployed in a particular rural area.”); *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, Declaratory Ruling, WT Docket No. 07-53, 22 FCC Rcd 5901, 5921 ¶ 55 (2007) (“Classifying all wireless broadband Internet access services as non-CMRS information services, will result in a uniform, technology neutral regulatory scheme for the provision of all wireless Internet access services”); *IP-Enabled Services*, Notice of Proposed Rulemaking, WT Docket No. 04-36, 19 FCC Rcd 4863, 4908 ¶ 68 (2004) (“[M]ost of our rules governing the licensing and operation of wireless services, particularly commercial services, are technology-neutral except to the extent necessary to prevent interference among competing spectrum uses.”).



the Commission's policy will have unintentionally created a dangerous sole source contracting environment. Thus, the National Broadband Plan should favor regulatory decisions that support public safety communications agencies having opportunities to fully evaluate the relative merits not only of alternative technologies in isolation, but of the comprehensive packages of service, price, and capability available in a competitive market.

Clearwire and Sprint respectfully submit that no single band of spectrum is a panacea for public safety. In dense urban environments, for example, the smaller cell size inherent in a network built out at 2.5 GHz provides more efficient use of broadband spectrum, and less potential interference, than a network employing a lower frequency band. While some have touted the larger cell size of 700 MHz architecture as an advantage (because it gives a larger coverage radius per cell), in dense environments this cell size may become a liability. Network architecture is determined by capacity, not coverage. That is, cell sites are planned based on the number of users likely to be on the network in a particular area. In dense environments, there is a capacity shortfall, not a coverage shortfall. The larger cell size at 700 MHz becomes a liability because there is more overlap between cells; the additional interference created by cell overlap requires mitigation measures, which lowers efficiency and throughput.

As JPMorgan recently found, “[o]ur analysis suggests that low frequency spectrum does not offer the perceived advantage over high frequency spectrum when used to support a wireless broadband business model in dense markets. If anything, lower frequency spectrum may confer a disadvantage because of interference issues.”<sup>18</sup> The result is that neither the 700 MHz band nor

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<sup>18</sup> North America Equity Research, JP Morgan Investment Advisory Report, *Clearwire: 2.5 GHz Spectrum Appears Misunderstood and Significantly Undervalued* (Feb. 26, 2008). The report states that “It is important to note that the outcome is not specific to WiMAX – it would be the same if the underlying platform is LTE, HSDPA or EVDO . . . We estimate CLWR [Clearwire] can support roughly 147 customers per square kilometer using one cell site. This assumes each customer demands about 1 Mbps of throughput and CLWR oversubscribes at 20 times. By contrast, a 700

the 2.5 GHz band is superior in all cases for all public safety applications or users. FCC policy should recognize this fact.

Furthermore, at least one WiMAX-based 4G mobile broadband provider already offers 4G broadband service in 24 markets today and plans to expand its coverage to more than 120 million people next year. Despite a few early trials, on the other hand, wide-scale LTE deployments will not occur until 2011 at the earliest. And because incumbent operators will seek to recoup the sunk costs of their existing 3G investments for as long as possible, vertically integrated 3G/4G service providers may have an incentive to slow-roll LTE deployment.

It is ironic that in a docket focused on producing “interoperable broadband public safety networks,” some parties seem intent on locking out competing technologies, and locking down public safety to their standard. The future of public safety broadband communications systems should not be decided through the marketing campaigns of individual carriers. Clearwire and Sprint hope that the Commission will not tilt the playing field towards any particular provider or standard, but instead keep public safety networks as interoperable, competitive, and as innovative as possible. If the FCC mandates any one particular standard as the preferred public safety technology, or acts in a way that creates path dependency with that one standard, however, it may unnecessarily increase costs and limit utility for public safety users. Worse still, embedding technology and band preferences into the public safety broadband system will make public safety networks far less innovative and more susceptible both to failure and economic capture than public safety rightly expects and deserves.

Public safety entities also should have access to WiMAX because it is an open standard that allows public safety to benefit from the full ecosystem of IP applications, while LTE, as

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MHz frequency signal can travel between 3 and 4 kilometers, covering between 28 and 50 square miles with one cell-site. The same 36 Mbps is spread across a greater area, offering far less bandwidth per covered POP.”

Verizon will eventually deploy it, is a more closed system that may restrict public safety applications not controlled by the incumbent carriers. Furthermore, WiMAX was built to be more cost effective to deploy and operate than a locked-down LTE standard. Far lower deployment and recurring costs could prove crucial for public safety users as they struggle to build and maintain systems in a challenging budget environment, which makes WiMAX very attractive as a public safety wireless broadband choice.<sup>19</sup>

For these reasons, public safety personnel should be able to select from best-in-class services across spectrum bands and among competing, fully interoperable technologies, whether WiMAX, LTE or some other standard. Each public safety entity should have the power to find the technology, standard, service provider, and price that meets its particular local needs. And each public safety entity can do exactly that and still enjoy full interoperability at the local and national levels. Clearwire and Sprint therefore urge the Commission to deliver competition, access to innovation through technological choice, and spectrum flexibility to local public safety users by adopting an all-networks approach, rather than a government-mandated technology.

**IV. THE NATIONAL BROADBAND PLAN SHOULD RECOMMEND AN AUCTION OF THE D-BLOCK AND SHOULD REJECT VERIZON’S PLAN TO ABANDON THE AUCTION MECHANISM.**

**A. A Modified D-Block Auction will Achieve the Commission’s Public Safety Goals and Free Additional Commercial Spectrum Resources.**

The Commission can advance two central goals of the National Broadband Plan through a modified D-Block auction. First, the FCC can strengthen the public safety community’s broadband resources, harnessing the all-network approach described above, by bringing

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<sup>19</sup> Verizon seeks to counter these points by arguing that giving public safety users a choice of wireless standards will somehow leave public safety out of the LTE development process. This is simply untrue. International standards bodies regularly and continuously update their specifications to ensure that they embody the latest technology improvements and spectrum developments. This activity will not stop if public safety entities evaluate wireless standards for themselves.

additional wireless broadband networks online more quickly and reliably through an auction than through any other means. Second, an auction is the only way for the Commission to deliver the additional spectrum resources sought by commercial service providers.

The outcome of Auction 73 makes it clear that the FCC must make significant changes to its D-Block auction structure to attract the private-sector participation needed for a successful buildout. Precisely how a new D-Block auction should be structured, however, largely depends on the approach selected for bringing 4G broadband capabilities and enhanced land mobile voice communications to the public safety community. If, for example, the Commission determines that the 10 MHz at 700 MHz already licensed to the PSST should be the nationwide home for a public safety broadband network, then D-Block auction revenues could be a funding source for that network, assuming Congress adopts the necessary legislation. On the other hand, D-Block auction revenues could also be directed to a fund from which public safety agencies could draw to implement the IP solutions needed to create interoperability among different commercial and private networks in their service area.

Clearwire and Sprint respectfully submit, therefore, that conclusive recommendations on the public-safety-related obligations that might attach to D-Block auction winners and/or the potential diverting of auction revenues to achieve public safety communications goals, can be best determined in concert with decisions on the alternatives discussed above and may not necessarily be ripe for articulation in the National Broadband Plan. We look forward to providing continuing input on this important consideration as the Commission further develops its public safety broadband direction, policies and rules.

**B. The Commission Should Reject Verizon's Proposal to Abandon the D-Block Auction.**

Clearwire and Sprint urge the commission to reject Verizon's proposal to abandon the auction mechanism and nationwide licensing in the D-Block.<sup>20</sup> Verizon's proposal suffers from three fundamental flaws. *First*, Verizon's proposal would delay the delivery of any new spectrum resources to public safety by years, thereby leaving public safety users in limbo indefinitely. Section 337(a) requires that the FCC allocate the D-Block for "commercial use to be assigned by competitive bidding." In 2007 the FCC found that reallocating commercial upper 700 MHz spectrum, including the D-Block, to public safety, would violate Section 337(a). Even Verizon admits that its proposal is inconsistent with the law.<sup>21</sup> Changing the law would, at best, significantly delay the delivery of any new spectrum resources to public safety or the commercial market. Worse yet, the change might never occur.

Unfortunately, this frustration will only be the beginning of the delay created if the Commission adopts Verizon's plan. Even if Verizon manages to achieve the change in law it seeks sometime in the future, the work needed before the D-Block would be available for public safety use will have just begun. Sprint's experience with the 800 MHz band reconfiguration and the 1.9 GHz BAS band relocation provides direct evidence of the next stage of challenges and delays inherent in Verizon's plan. Numerous state, local, country and other planning, funding, and coordination obstacles stand in the way of achieving a nationwide, interoperable broadband public safety communications network through a plan that requires linking thousands of local licenses. This level of delay and uncertainty, given the pressing need for additional public safety communications capabilities -- both broadband and mission-critical voice services -- is too great

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<sup>20</sup> See Verizon Reply Comments.

<sup>21</sup> *Id.*

a risk to take.

*Second*, Verizon's proposal would increase costs to public safety users, states, localities, and taxpayers. Public safety agencies simply do not have the funds to build new broadband networks from scratch.<sup>22</sup> The severe budget cuts experienced across the country in the past several years have only heightened the financial limitations of these entities. Nonetheless, Verizon's proposal would force every local public safety agency to raise funds to construct and operate an expensive network with a set of as-yet-undefined, and potentially expensive to implement, interoperability mandates. And Verizon's plan forces localities to pay for this network out of their own pockets with no financial support drawn from auction revenues.<sup>23</sup>

Verizon references a vague Request for Proposal ("RFP") process in what may be an attempt to address this flaw.<sup>24</sup> It appears that Verizon envisions public safety entities issuing RFPs that seek private-sector partners willing to pay for the construction of a public safety network in exchange for day-to-day control of the D-Block spectrum. But there is no way to gauge the likelihood that all public safety entities will find a suitable partner, and therefore whether networks will ever be built.

Furthermore, requiring a separate grant application and award process for each public safety licensee would subject potential private sector service providers to hundreds of jurisdictions' individual and often inconsistent requirements, uncertainties, burdens, and delays. This would either deter most commercial operators from bidding in response to an RFP, or lead

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<sup>22</sup> Reply Comments of APCO and NENA, WT Docket No. 06-150, PS Docket 06-229 (filed Nov. 12, 2008) ("The vast majority of smaller and/or cash strapped agencies would be left out in a local or regional licensing model."); APCO Statement ("most local and state governments lack the financial resources necessary to deploy new broadband technologies.).

<sup>23</sup> Verizon Reply Comments.

<sup>24</sup> *Id.*

them to submit bids that leave localities with too many costs or that are based on substandard networks. And the RFP process also leaves service providers free to submit bids only to public safety entities in communities where the costs of building a network or providing service are low. Higher cost, likely rural, communities may find that their RFPs are met with silence as Verizon and AT&T focus their attention on urban and suburban areas of the country.

*Third*, Verizon’s proposal would compound existing public safety interoperability problems and extend them to next-generation public safety networks. Verizon hopes that the Commission will abandon the nationwide D-Block license and replace it with dozens or hundreds of small geographic area licenses. It wants the FCC to believe that somehow local public safety agencies will then all agree upon – and magically find resources to fund – a single, common mobile broadband standard for every community in America. This proposal is nothing more than a recycled version of the approach adopted twenty years ago.

In the 1980s the FCC allocated spectrum, and then granted thousands of licenses, for the National Public Safety Planning Advisory Committee band.<sup>25</sup> APCO Project 25 (“P25”) then offered a common standard for public safety agencies’ land mobile radio systems.<sup>26</sup> The Commission hoped that planning and cooperation requirements would lead to seamless mutual aid and interoperability across police, fire, rescue and administrative support services, and even political jurisdictions. Unfortunately, it has not. Despite the passage of 20 years, public safety agencies have been slow to embrace and adopt an interoperability standard and to build the kinds of interoperable networks that the FCC theorized they would construct – largely due to the same

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<sup>25</sup> *Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the 821-824/866-869 MHz Bands by the Public Safety Services*, Report and Order, Gen. Docket 87-112, 3 FCC Rcd. 905 (1987).

<sup>26</sup> For details on APCO Project 25, see <http://www.apcointl.org/frequency/project25>.

kind of funding constraints, administrative problems, and lack of centralization that plague the Verizon proposal.<sup>27</sup> The Commission should not make the same mistake twice.

## **V. CONCLUSION.**

Clearwire and Sprint appreciate the Commission's efforts to harness the power of broadband for public safety. To do this most effectively, we request that National Broadband Plan: (1) establish a set of clear principles, focused on competition, technology neutrality, and spectrum diversity, to guide the agency's pursuit of public safety communications policies; (2) adopt an "all-networks" approach to advancing public safety communications that recognizes the power of digital cross-connect technologies to achieving interoperability, and reject any proposal that calls for a federally mandated public safety technology or standard; and (3) reject Verizon's plan to eliminate a D-Block auction.

Respectfully submitted,

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<sup>27</sup> NSTAC Report to the President on Emergency Communications and Interoperability (Jan. 16, 2007).